

REMARKS/ARGUMENTS

Claims 21-30 are pending in the application. Claims 1-19 have been cancelled by this amendment in order to expedite prosecution of this application. Applicant respectfully requests reconsideration of the application in view of the following remarks.

In the Office Action, claims 1-19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,293,479 (Quintero et al.). Applicants respectfully submit that this rejection has been rendered moot in view of the cancellation of claims 1-19 above.¹ Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 21-24 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,784,286 (Hirose et al.) Applicants respectfully traverse this rejection and request reconsideration because nothing in Hirose et al. would have rendered obvious Applicants' invention as particularly recited in claims 21-24.

As recited, for example, in Applicants' claim 21, Applicants' claimed invention is directed to a "method of configuring a product, the method comprising the steps of: representing product knowledge in a hierarchical structure, wherein said representing step includes storing product category information in frames in the form of nodes of the hierarchical structure and storing product features and options in slots for respective nodes of the structure; . . . performing frame-based inferences of the product knowledge stored in the hierarchical structure based on answers received in

¹ Applicants in no way agree with (or acquiesce in) any of the bases for the rejection of claims 1-19, but have merely attempted to expedite prosecution of this application by reducing the issues of contention.

said receiving step; and configuring a product with features and options based on inferences made in said performing step.” Claim 21 (emphasis added). As recited in claim 21, Applicants’ claimed method does not merely perform any inference of data based on answers to product-specific questions, but is particularly limited to use of a “frame-based” inference.

The frame-based inference performed in Applicants’ claimed method requires a representation of product knowledge in a “hierarchical structure,” as illustrated, for example, in Applicants’ Fig. 31. In particular, such representation involves the storing of “product category information in frames in the form of nodes” of the hierarchical structure, while storing “product features and options in slots” for respective nodes of the structure, as specifically recited in claim 21.

Utilizing such a hierarchical structure, the frame-based inference is made more efficiently as it relies on the properties of “inheritance” to produce attributes of desired products. As explained in Applicants’ Specification, for example:

Inheritance is a parent to child relationship, but not in the traditional sense. In human beings, if a parent has a trait, the child may or may not share that trait (e.g., brown hair). In this form of knowledge inheritance, the child must inherit all traits. Inheritance is important, because it allows the software engineer to combine all the identical traits for the children in one logical place: the parent.

Id. at 14. Also, as explained in the Specification, for example:

Children inherit everything from their parents, grandparents, and great grandparents, all the way up the tree. In the future, if the store added Pumpernickel and carried it for all types of bread, such information could be added to the Bread frame. If the store offered Pumpernickel for Loaves only and not Buns, then Pumpernickel could be added to the Loaves frame. Without the power of inheritance, Pumpernickel would have to be manually added to every type of bread.

Id. at 15. Nothing in Hirose et al. discloses (or renders obvious) the use of “frame-based” inferences, the storage of product knowledge in a “hierarchical structure,” or any of the characteristics of a frame-based engine.

Indeed, Hirose et al. performs no “inferences” whatsoever (i.e., of any kind). Hirose et al. merely discloses a method of recording a manual design process. See, e.g., column 2, lines 65-68 (“The present invention provides a design process recording method and a design process recorder which implements the design process recording method.”). Nowhere does Hirose et al. utilize the steps of “performing frame-based inferences” and “configuring a product with features and options based on inferences made in said performing step,” as required, for example, in Applicants’ claim 21.

The “story teller” feature of Hirose et al. is used to play back a previous design stored in the system, allowing users to browse or query the system to review aspects of the previous design record. Column 7, line 45 to column 8, line 41. The “story teller” feature does not permit the “inference” of new design data based on input from a user (e.g., in the form of answers to product-specific questions). If any inference of design data were being performed, the design would change depending on the user inputs. In Hirose et al., however, changes in user inputs merely result in different views (or stages) of the same design, as previously recorded. If no previous design were recorded, no amount of user inputs would result in any inference leading to a designed product.

Because Hirose et al. is merely a “recorder” and not an automatic design system, Hirose et al. is unable to perform the step of “configuring a product,” as required, for example, in Applicants’ claim 21. The passage (column 12, line 19 to column 13, line 10) relied upon in the Office Action (at 10) details the “storyboard” views produced by the “story teller.” Again, different views (or stages) of the same

design are depicted on the storyboards. No configuration of different products is possible from the “story teller” or the “storyboards” disclosed in Hirose et al.

Moreover, nothing in Hirose et al. discloses the representation of “product knowledge in a hierarchical structure,” as required in Applicants’ claim 21. Even if some “product knowledge” could be found in Hirose et al., which Applicants’ dispute, Hirose et al. only discloses the use of arbitrary associations or relationships among data elements without any hierarchy. Indeed, Hirose et al., for example, specifically condones the use of hierarchies, noting: “Rather than enforcing a hierarchical breakdown on the individual parts of an artifact or set of related concepts, this component allows one to make arbitrary, overlapping associations among these parts, something that is particularly useful in conjunction with the <Issue> component.” Column 6, lines 37-42. (Applicants’ traverse any contention that the mere use of the term “node” in Hirose et al. inherently discloses the use of a “hierarchical structure,” as required in claim 21.) Nor is there any disclosure of “product category information” in the form of nodes or “product features and options” in the form of slots for the nodes.

Furthermore, Hirose et al. fails to disclose the step of “outputting a set of product-specific question” and “receiving individual answers to respective ones of the set of product-specific questions,” as recited in claim 21. The passages relied upon in the Office Action (at 9) merely depict “commentary” fields that include the original designer’s questions and answers with respect to the design recorded. Nothing in Hirose et al. outputs individual questions to a user and solicits individual answers to such questions, as required in Applicants’ claimed invention.

For at least any of these reasons, the rejection of claim 21 is in error and should be withdrawn.

In addition, even if it were assumed for the sake of argument that Hirose et al. could somehow be read to include a “rule-based” inference engine, as implied in the Office Action (at 10-11), such a disclosure is evidence that Hirose et al. teaches away from the “frame-based inferences” limitation expressly recited in Applicants’ claim 21. As a general rule, “references that teach away cannot serve to create a prima facie case of obviousness.” In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994).

Rule-based inference engines input knowledge into a set of rules. These rules are fired based on user or procedural inputs to eliminate certain sets of possible states that the system can implement. There is no “hierarchical” structure or use of “inheritance” in a rule-based system. As a result, individual rules must be created for each new feature added to the system. As the complexity of the system increases, the number of rules grows exponentially. The usability of the system becomes unmanageable, as the likelihood of conflicting rules and “dead end” states increases to produce erroneous and unpredictable results—results that are not found in a frame-based system, as used in Applicants’ claimed invention.

The reliance on the “story teller” feature of Hirose et al. is misplaced. Nothing in the cited passages, nor anything in Hirose et al., provides an incentive or motivation for one of ordinary skill in the art to completely remove the (allegedly disclosed) rule-based engine of Hirose et al. with a frame-based system. Indeed, the Office Action relies on no prior art to show that one of ordinary skill in the art would have known or even contemplated the use of any other type of inference engine.

For this reason alone, the rejection of Applicants’ claim 21 is in error and should be withdrawn. As Applicants’ claims 22-24 depend (directly or indirectly) on claim 21, the rejection of claims 22-24 is similarly in error and should be withdrawn at least for the same reasons given above with respect to claim 21.

Claims 25-30 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirose et al. in view of Quintero et al. Applicants respectfully traverse this rejection and request reconsideration because nothing in Hirose et al. or Quintero et al., taken alone, or in combination, renders obvious Applicants' invention as specifically claimed.

Much like Applicants' claim 21, claim 25 requires the performance of "frame-based inferences" or a product knowledge base in the "configuring" of an assembly. As noted above, Hirose et al. fails to disclose (or render obvious) a method of performing "frame-based inferences" in "configuring" a product, assembly, or any other device or manufacture. The Office Action relies on Quintero et al. merely to show that the feature of quoting a price for an assembly would have been obvious to one of ordinary skill in the art. Thus, even if such a contention were true, which Applicants' dispute, nothing in Quintero et al. is relied upon to cure the deficiencies in Hirose et al., as noted above. For this reason alone, the rejection of claim 25 is in error and should be withdrawn.

In addition, Applicants' note numerous other deficiencies in Hirose et al. with respect to Applicants' claim 25. Claim 25 specifically requires, for example, the step of "requesting a product type." The portion of Hirose et al. relied upon in the Office Action (at 12) does not allow a user to "request a product type," but instead allows the user to browse through different components of the same product that is the subject of the previously recorded design. Nor is there anything in Hirose et al. that can be used for "prompting a set of product-specific questions selected based on product type requested" or "providing answers to product-specific questions as prompted," as required in Applicants' invention, as recited in claim 25.

For at least these additional reasons, Applicants respectfully submit that the rejection of claim 25 is in error and should be withdrawn. As claims 26 and 27 depend

(directly or indirectly) from claim 25, the rejection of claims 26 and 27 is similarly in error and should be withdrawn for the same reasons given above with respect to claim 25.

Claim 28, like Applicants' claim 21, also requires the use of "frame-based inferences" and the generation of "configuration data representing configuration of a desired product based on the inferences made." As noted above, nothing in Hirose et al. or Quintero et al., taken alone, or in combination, discloses (or renders obvious) these claimed features. For these reasons alone, the rejection of claim 28 is in error and should be withdrawn.

In addition, however, nothing in Hirose et al. discloses a "data storage subsystem" which is "a repository of product information representing knowledge of products including type, style and size." At most, Hirose et al. discloses information of a single product that had been previously designed. Hirose et al. does not teach a collection of multiple products having different types, styles and sizes in a knowledge base, as required in Applicants' claim 28. Nor does Hirose et al. disclose (or suggest) an inference engine that performs frame-based inferences "of the values of answers to other questions automatically," as required in claim 28. That is, in Applicants' invention of claim 28, not only does the system permit users to answer product-specific questions, the claimed system also automatically provides answers to other questions (through frame-based inferences) so that the user need not input such answers.

As nothing in Hirose et al. or Quintero et al., taken alone, or in combination, discloses (or renders obvious) these claimed features, the rejection of claim 28 is in error and should be withdrawn for at least these additional reasons. Because claims 29 and 30 depend from claim 28, the rejection of claims 29 and 30 is similarly in error and should be withdrawn for the same reasons given above with respect to claim 28.

In view of the foregoing, Applicants respectfully request reconsideration of the application and ask that the application be passed to issue at the earliest possible convenience with claims 21-30.

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